

UK Patent Application GB 2 288 367 A

(43) Date of A Publication 18.10.1995

(21) Application No 9507870.5

(22) Date of Filing 18.04.1995

(30) Priority Data

(31) 4413230

(32) 15.04.1994

(33) DE

(51) INT CL⁶
B41F 33/00

(52) UK CL (Edition N)
B6C CVT C1200 C1230 C1280

(56) Documents Cited

GB 1569961 A EP 0527407 A US 5029527 A
US 4639881 A US 3930447 A

(58) Field of Search

UK CL (Edition N) B6C CBX CVSG CVSX CVT
INT CL⁶ B41F 33/00 33/02
Online: WPI

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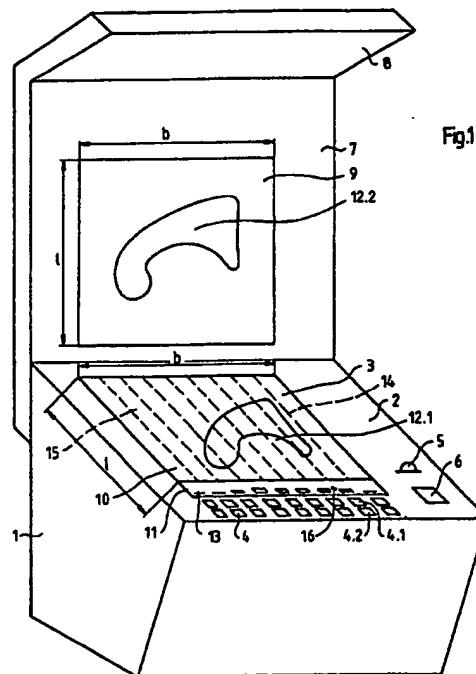
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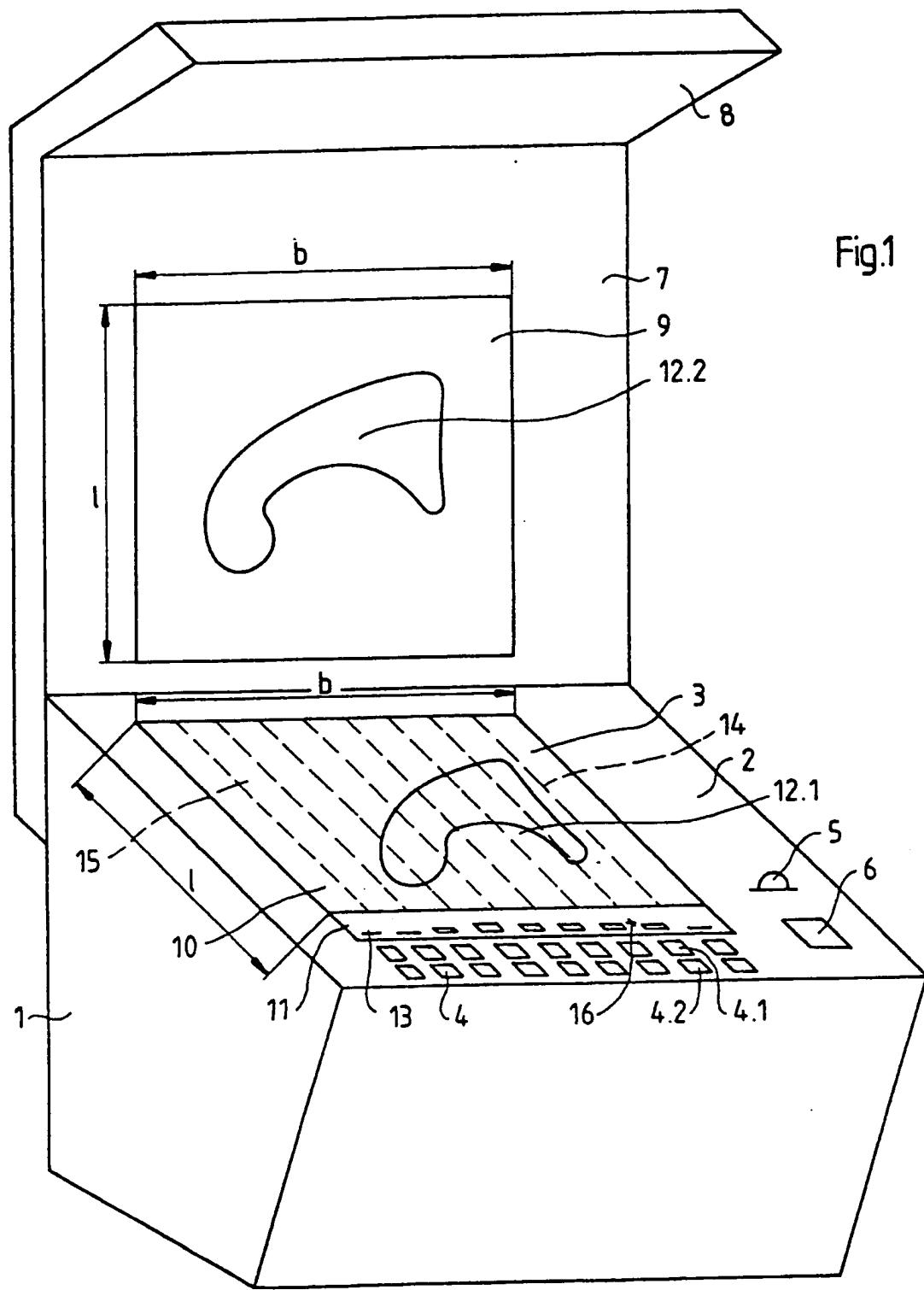
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(54) Operating panel for a printing machine

(57) The panel allows control of ink distribution in a printing machine and contains a colour screen (3) which makes it possible to display a full-scale printed image. The screen (3) is divided into a full size window representing the printed image, and a smaller window (10) having ink control keys (4.1, 4.2) to allow increases or decreases in ink supply in regions across the printed workpiece. A printed sheet (9) is displayed above the screen, for comparison purposes.



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OPERATING PANEL FOR A PRINTING MACHINE

5 This invention relates to an operating panel or control panel for controlling ink distribution in a printing machine.

Operating panels for printing machines are known which comprise a table-like surface on which printed sheets are 10 inspected. Each printed sheet to be inspected may be positioned on the table-like surface by means of adjustable stop bars and locking elements so that it lies along an ink-zone keyboard forming a line, with the ink zones on the printed sheet corresponding to the assigned ink keys which 15 represent the number of ink zones and the respective distance therebetween and are disposed in the operating panel. By means of the ink keys, the amount of ink, i.e. the ink distribution, is controlled. This amount is adjusted in a printing unit and on the printed sheet 20 transversely with respect to the conveying direction by means of zonally active ink-metering elements. When aligning printed sheets with respect to the ink zones, the table-like surface may feature marks defining the limits of the ink zones.

25 Such an alignment is not exact because it depends on the diligence of an operator. Furthermore, the marks are covered when inspecting a printed sheet so that only marks not covered by the respective printed sheet may be used for the inspection. Especially in the case of motifs with 30 stripe-shaped elements running towards the ink zones or oblique thereto, an orientation on the basis of the ink zones is difficult.

Display elements arranged in lines may be provided in addition to the ink-zone keyboard, said display elements 35 representing the positions of ink-metering elements within the printing machine.

Moreover, it is known to provide the operating panel with a screen connected to a computer. Among other things,

the adjusting variables for metering the ink and/or dampening medium may be displayed on said screen. It is also known to represent on the screen a photo taken of a print by means of a camera. A disadvantage thereof is the 5 fact that a conventional screen displays only a reduced size print, thus rendering difficult the visual evaluation in view of controlling the ink-metering elements. Furthermore, the screen is usually located remote from the ink-zone keyboard so that the display on the screen is not very 10 suitable for both the evaluation of the printed image by comparison and the adjustment of the ink-metering elements.

It is the object of the invention to provide an improved operating panel permitting better handling, and to enable better control of ink distribution in the printing 15 machine, thus resulting in improved quality printing.

According to the invention, the object is achieved in that the operating panel comprises a colour screen on which a representation of the printed image is displayed in a scale 1:1 with respect to the desired printed image and on 20 which zonally distributed operating and display elements are assigned with respect to each other so that a direct visual comparison or assignability is provided.

The size of the colour screen makes it possible to display at least a part of a representation of the printed 25 image, i.e. the part in the area of at least one ink zone, on one part of the screen, and compare it with a corresponding part of what the printed image should look like on another area of the screen, even for the largest format to be printed, and at full size.

30 It is cost-advantageous to integrate the display elements representing the position of zonal ink-distributing devices in the printing machine into the colour screen so that separate display elements can be dispensed with. It is appropriate to divide the display area of the colour screen 35 in two windows, the first window displaying a full scale representation of the printed image, and the second window, directly adjacent to said first window, representing or comprising the display elements graphically and/or

alphanumerically.

According to a modified embodiment, the operating elements by means of which the ink-distribution devices are set are also represented in the second window. Hence, the 5 operating elements may be either actual keys, or may be pictorial representations of keys which are actuated by means of a cursor control device, light pen, mouse, tracking ball or a touch-screen method. For this purpose a computer which has a controlling function is assigned to the 10 operating panel.

The colour screen may be integrated into a conventional table-like surface; in addition, an inspecting device may be provided to inspect the printed products. The 15 ink zones of the printed products of the inspecting device may be arranged in the same direction as are the ink zones, said direction being predetermined by the ink zones on the colour screen and/or the arrangement of the operating and display elements.

It is advantageous also to represent on the colour 20 screen in the printed image the limits of the ink zones in the scale 1:1; thin lines drawn in bright colours may be superimposed in the printed image to display said limits.

As a colour screen, any type of visual display terminal which is available on the market and based on 25 cathode-ray technology, liquid-crystal technology, or projection technology may be used.

An embodiment of the invention is explained in greater detail with reference to Figure 1 which shows an operating panel.

30 The operating panel 1 comprises a worktable 2 with a large-sized colour screen 3, ink-control keys 4, a cursor control device 5, and an acknowledgement key 6. A holding means 7 and an illumination device 8 for inspecting a printed sheet 9 of the desired quality are associated with 35 the operating panel. The size of the colour screen 3 is at least $1 \times b$ (length x width), said size corresponding to the size of the maximally printable sheet format $1 \times b$. The display area of the colour screen 3 is divided into two

windows 10, 11, window 10 displaying a representation 12.1 of the actual printed image in the scale 1:1, and window 11 displaying the state of the ink-setting elements in the form of a bar-like diagram 13. A desired form of the printed image 12.2 on a printed sheet 9 may be used as a reference image for comparison purposes, whereas window 10 displays the representation 12.1 of the actual printed image 12.2, which is produced by means of an image-recording device (not illustrated) which is provided in the printing machine after the last printed unit and which is directed onto the sheets passing it, or vice-versa.

The state of the ink-setting elements 13 in the printing machine may be changed by means of the ink-control keys 4. A first set of ink-control keys 4.1 is disposed in an upper row and serves to increase the amount of ink supplied in the respective zone, whereas a second set of ink-control keys 4.2 disposed in a lower row serves to decrease the amount of ink supplied. Thin lines 14 representing the limits of the ink zones 15 are superimposed in the representation 12.1 of the printed image 12.2 displayed in window 10. By means of the cursor control device 5, a cursor 16 may be positioned in the window 11. With the cursor 16 being positioned at defined positions in window 11, it is possible, by means of the acknowledgement key 6, to effect control functions which may cause an increase and a decrease, respectively, of the amount of ink supplied to an ink zone 15. A computer (not illustrated) may be accommodated in the operating panel to perform a controlling function. Obviously, control devices other than a cursor control device 5 may be used to control the keys 4, or pictorial representations thereof, such as a mouse or the like.

In summary, therefore, we provide an operating panel 1 having a worktable 2 and a printed sheet holding panel 7 on which a full size representation of a printed sheet showing the desired print quality is supported, as shown at 9. The desired image on the sheet is illustrated at 12.2 and the dimensions of the sheet are represented by "1" and

"b".

The worktable 2 has a colour screen 3 thereon which is divided into zones 15 by a plurality of parallel lines 14. It is possible to display on the colour screen 3 a full size representation of an actual sheet as printed by a printing machine to which the operating panel is connected, the actual representation of the printed image being shown in full size at 12.1 on the colour screen. The various zones 15 correspond with actual ink zones in the printing machine and hence if the quality of the image on the sheets being printed and as represented on the screen 3 does not compare favourably with the desired quality as shown on the print representation 12.2, then it is possible by means of the operating panel to change, i.e. increase or decrease, the amount of ink and/or, for example, the damping medium applied thereto in the ink zones in the printing machine corresponding to the various zones 15 represented on the screen 3. For this purpose the worktable 2 is divided into two windows 10 and 11, the window 10 being the actual colour screen and the window 11 showing graphically the intensity of the ink being applied to the sheets by a printer in the printing machine. A bar-type diagram 13 made up of a plurality of images representing ink intensity is therefore provided in the window 11. Immediately below the window 11 are a plurality of ink control keys 4, these being located opposite the respective zones 15 on the screen, each key 4 being duplicated so that there is a first key 4.1 in an upper row which, if actuated, serves to increase the amount of ink being supplied in the respective zone of the printing machine, and a second key 4.2 in a bottom row which, if actuated, decreases the amount of ink supplied in the corresponding zone in the printing machine. Hence, if it appears that a certain zone of the image 12.1 is too light or feint, then the key 4.1 for that zone can be pressed so as to increase the ink for that zone. By pressing the key 4.1 the appropriate ink display in the bar-type diagram 13 for the zone will increase in size. Accordingly, the bar-type diagram 13 gives a visual representation of the amount

of ink being supplied in the corresponding zone in the printing machine.

The colour screen 3 is sufficiently large to enable part of the image on a sheet being printed to be represented 5 on the screen and to have a corresponding part of the desired sheet displayed alongside the representation. This allows direct comparison between the desired and actual part images. The representation on the colour screen 3 is constantly renewed, so that an operator can continuously 10 observe the effects of settings at the colour control keys 4.

The worktable 2 is also provided with a cursor control device and an acknowledgement key 6, there also being a cursor 16 which can be swept across the screen by the 15 control device 5.

Instead of using actual ink control keys 4, the cursor under the control of the control device 5 can be used to control ink quality in the printing machine with the aid of a computer associated with the worktable, and it is also 20 envisaged that other control devices such as a mouse could be used in conjunction with a computer to control ink quality by moving the mouse across selected zones on the screen and then over selected images on a lower part of the screen corresponding to the bar-type diagram 13 and the ink 25 control keys 4.1 and 4.2.

It will of course be understood that the present invention has been described above purely by way of example, and modifications of detail can be made within the scope of the invention.

LIST OF REFERENCE NUMERALS

- 1 operating panel
- 2 worktable
- 3 colour screen
- 4 ink-control key
- 4.1 ink-control key
- 4.2 ink-control key
- 5 cursor control device
- 6 acknowledgment key
- 7 holding means
- 8 illumination device
- 9 printed sheet
- 10 window
- 11 window
- 12.1 printed image
- 12.2 printed image
- 13 bar-type diagram
- 14 line
- 15 ink zone
- 16 cursor

CLAIMS:

1. An operating panel for a printing machine comprising a colour screen and operating and display elements for the adjustment of zonally active ink-distribution devices provided in the printing machine, and hence a printed image, whereby the number and location of said operating and display elements correspond to the number and location of ink zones in the printing machine, and wherein the colour screen is of a size which makes it possible essentially to display a full scale representation of a desired printed image, the representation of the printed image being directly visually assignable to the operating and display elements.
- 15 2. An operating panel according to claim 1, wherein, in addition to the representation of the printed image in a scale 1:1, the display elements are displayed on the colour screen.
- 20 3. An operating panel according to claim 1, wherein, in addition to the representation of the printed image in a scale 1:1, the display elements are displayed on the colour screen, and wherein a control device by means of which the operating elements are actuatable under computer control is provided on the operating panel.
- 25 4. An operating panel according to claim 1, 2 or 3, wherein the operating panel contains an inspecting device for at least one printed product, said printed product being arranged so that it may be directly visually compared with the full-scale representation of the printed image with respect to position and direction of the ink zones.
- 30 5. An operating panel according to claim 1, 2, 3 or 4, wherein the limits of the ink zones are displayed on the colour screen.
- 35 6. An operating panel according to any one of claims 1-

5, wherein the size of the colour screen permits a part of a representation of the printed image to be presented on the screen alongside an actual representation of the same part, which shows the desired image.

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7. An operating panel for a printing machine for assessing printing quality and enabling ink in the printing machine to be adjusted, the operating panel being connectable to the printing machine and comprising a worktable having a display screen thereon in which a full size representation of a printed sheet may be displayed, the screen being divided into a plurality of ink zones corresponding to ink zones in the printing machine by a plurality of parallel lines on the screen, the operating panel including a display panel on which a full size sheet showing the desired quality of the printed image may be displayed so that that desired image can be compared with the representation of the actual printed image, and ink control means associated with each zone on the screen which are actuatable to increase or decrease the ink distribution in the printing machine for that zone, there being display means associated with each ink zone on the screen representing the amount of ink being applied to the printed sheet in the printing machine in the corresponding zone.

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8. An operating panel according to claim 7, wherein the ink control means comprises keys for increasing or decreasing the amount of ink supplied in the respective zone in the printing machine.

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9. An operating panel according to claim 7, wherein the ink control means comprise touch screen type panels actuatable by cursor control, a mouse, a light pen, a tracking ball or an equivalent device.

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10. An operating panel for controlling ink distribution in a printing machine substantially as hereinbefore described with reference to the accompanying drawings.

Relevant Technical Fields

(i) UK Cl (Ed.N) B6C: CBX, CVT, CV5G, CV5X
 (ii) Int Cl (Ed.6) B41F: 33/00, 33/02

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Search Examiner
A DAVEY

Date of completion of Search
13 JUNE 1995

Documents considered relevant following a search in respect of Claims :-
1-10

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 1569961 A	(HEIDELBERGER) see display, Figure 2	1, 7
X	EP 0527407 A	(MAN-ROLAND) see Figure 1 and Abstract enclosed	1, 7
X	US 5029527	(HEIDELBERGER) see eg Figure 1a	1, 7
X	US 4639881	(MAN-ROLAND) see eg Figure 1	1, 7
X	US 3930447	(HARRIS) note display and control, Figure 3	1, 7

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).